



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/099,875	03/15/2002	Qian Yu	51519-P001US-10203244	5395

29053 7590 04/13/2006

DALLAS OFFICE OF FULBRIGHT & JAWORSKI L.L.P.  
2200 ROSS AVENUE  
SUITE 2800  
DALLAS, TX 75201-2784

EXAMINER

LEE, DAVID J

ART UNIT	PAPER NUMBER
----------	--------------

2613

DATE MAILED: 04/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/099,875

Applicant(s)

YU ET AL.

Examiner

David Lee

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-19 is/are allowed.
- 6) ☒ Claim(s) 1-9 and 20-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6 are rejected under 35 U.S.C. 102(e) as being anticipated by He et al. (US Patent No. 6,621,067 B2).

Regarding claim 1, He discloses a method of polarization-scrambling an incoming optical signal, comprising the steps of: causing a variation of the SOP as a function of time for an incoming optical signal (col. 7, lines 41-43) that has an unknown SOP to produce a polarization-scrambled optical signal (col. 7, line 41: since the operation of the polarization scrambler is independent of the input SOP, the SOP is be unknown); and periodically changing said SOP of said polarization-scrambled optical signal with time (col. 4, lines 57-63), such that said periodically changing polarization-scrambled optical signal covers approximately an entire Poincare sphere surface during each time period of said periodic changing (col. 9, line 67 to col. 10, line 3; the signal covers the entire Poincare sphere in a time period).

Regarding claim 2, He discloses that the SOP is distributed substantially uniformly over said entire Poincare sphere during each time period (col. 3, lines 40-41).

Regarding claim 3, He discloses that the method further comprises the steps of propagating the periodically changing polarization-scrambled optical signal through a fiber-optic

Art Unit: 2613

transmission link (col. 1, line 16) that contains polarization dependent loss (col. 1, line 13, and col. 1, line 43); producing a period variation as a function of time of the optical power of the polarization-scrambled optical signal propagating through the fiber-optic transmission link and measuring the optical signal power variation in real time (col. 10, line 3-6).

Regarding claim 4, He discloses that the real-time measured optical signal power variation consists of peak-to-peak optical signal power variation (col. 10, line 5).

Regarding claim 5, He discloses that the optical signal power variation is measured using a photo-detector (col. 9, line 65).

Regarding claim 6, He discloses that the fiber-optic transmission link contains optical fibers (fig. 5, photo-detector 12 and col. 1, line 16).

Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Poggiolini (US Patent No. 5,127,066).

Regarding claim 1, Poggiolini teaches a method of polarization-scrambling an incoming optical signal, comprising the steps of: causing a variation of the SOP as a function of time for an incoming optical signal that has an unknown SOP to produce a polarization-scrambled optical signal (col. 3, lines 7-10; the SOP is unknown); and periodically changing said SOP of said polarization-scrambled optical signal with time (col. 3, lines 7-10;), such that said periodically changing polarization-scrambled optical signal covers approximately an entire Poincare sphere surface during each time period of said periodic changing (col. 3, lines 24-26; and see also claim 4).

Regarding claim 2, Poggiolini discloses that the SOP is distributed substantially uniformly over said entire Poincare sphere during each time period (col. 8, lines 20-27).

Claims 7-9 and 20-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Suh et al. (US Pub. No. 2002/0109901 A1).

Regarding claim 7, 9 and 20, Suh discloses a system for real-time compensation of the performance degrading effect induced by PDL in a multi-wavelength fiber-optic communication system (fig. 16A), said system comprising: a first optical polarization controller having an input port operable to receive an input optical signal having a polarization state (fig. 16A, PC section 752), said first optical polarization controller being operable to adjust the polarization state of the input optical signal to produce a first intermediate optical signal (fig. 17, polarization scrambler 820); a first optical element coupled to the first polarization controller (fig. 16A, birefringent element 758) and operable to receive and to cause a fixed PDL (a natural limiting factor in high-capacity WDM systems) in the first intermediate optical signal to produce a second intermediate optical signal; a second optical polarization controller (fig. 16A, PC section 756) coupled to said first optical element, the second optical polarization controller being operable to adjust the polarization state of the second intermediate optical signal to produce a third intermediate optical signal (fig. 17, polarization scrambler 820); and a second optical element substantially identical to said first optical element (fig. 16A, 758 on right side of PC section 756), the second optical element being operable to receive and to cause a fixed PDL in the third intermediate optical signal (PDL is a natural limiting factor in high-capacity WDM systems) to produce an output optical signal.

Art Unit: 2613

Regarding claims 8 and 21, Suh discloses that the system has an adjustable PDL (paragraph 0155: the adjustability feature in the system as described by Suh can be constructed according to a PDL controller).

Regarding claim 22, Suh discloses that the system comprises a recirculating optical loop (fig. 15: feedback loop, fig. 16A: the recirculating loop is incorporated with the feedback sensor 758 and circulates throughout the system).

#### ***Allowable Subject Matter***

2. Claims 10-19 are allowed as indicated in the previous Office action.

#### ***Response to Arguments***

3. Regarding the prior art issue of Suh (US Pub. No. 2002/0109901 A1), support has been found in the Suh provisional application (see Sluz, Application No. 60/230687) as indicated in the previous Office action and copies have been provided to applicant. In view of this submission, it is recognized that Suh is proper prior art under 35 U.S.C. 102(e) and the limitations have been rejected accordingly.

Applicant's arguments filed on 1/31/2006 regarding claims 1-6 have been fully considered but they are not persuasive.

Regarding the rejection of claim 1 by He, applicant argues that the reference does not teach "periodically changing said SOP of said polarization-scrambled optical signal with time, such that said periodically changing polarization-scrambled optical signal covers approximately an entire Poincare sphere surface during each time period of said periodic changing." Examiner

Art Unit: 2613

disagrees. In column 9, starting from line 67, He discloses that the SOP covers an entire Poincare sphere in a period of time (“in time”). In other words, the SOP of the signal is changed periodically, and in a time period, the signal covers an entire Poincare sphere. Examiner interprets this to read on the limitations of claim 1. Furthermore, the claim does not define a “time period” and therefore examiner reasonably interprets this limitation to mean the period of time in which all the points on the Poincare sphere are covered. Applicant also insists that He only discloses a “single time period.” Again, examiner interprets the limitation of a “time period” to mean the period of time in which all the points on the Poincare sphere are covered. In this respect, since the varying of the SOP is continuous throughout and during operation, the varying of the SOP is not a single incident, but rather comprising of on-going and subsequent “time periods.” Applicant is reminded that although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Regarding the rejection of claim 1 by Poggiolini, applicant argues that Poggiolini does not teach that the SOP covers approximately an entire Poincare sphere surface. However, it is clearly stated in the disclosure of Poggiolini that “the vector *representative* of the electromagnetic field on the Poincare sphere moves by one complete revolution on a great circle *of the sphere itself* in one symbol period” (col. 3, lines 23-29). It is noted that the vector is representative of the entire Poincare sphere and the revolution comprises the surfaces of the sphere itself.

Art Unit: 2613

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Lee whose telephone number is (571) 272-2220. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DL

  
KENNETH VANDERPUYE  
SUPERVISORY PATENT EXAMINER